Vitamin D Analogs "3D-QM" and "3D-QMS" for Treating Cancer and Bone Diseases

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Technology description

The hormonally active form of vitamin D, known as calcitriol or 1,25 dihydroxyvitamin D_3, has shown promise for treating diseases ranging from osteoporosis to cancer to psoriasis. However, the hormone mobilizes calcium from bones and increases intestinal absorption of dietary calcium. Effective therapeutic concentrations can lead to hypercalcemia; a condition characterized by elevated blood calcium levels, alterations in mental status, muscle weakness and calcification of soft tissues and organs such as the heart and kidneys. Therefore, a need exists for new compounds that provide desirable therapeutic effects without causing dose-limiting hypercalcemia. UW–Madison researchers have developed vitamin D analogs (20S) and (20R)-3-desoxy-1a,25-dihydroxy-2-methylene vitamin D_3.These compounds are known also as 3D-QMS and 3D-QM, respectively. They exhibit anticancer properties of high binding affinity and cell differentiation activity. High calcemic activity suggests treatment for bone ailments and diseases.

Application area

Prodrug use
Therapy for bone diseases, osteoporosis, renal osteodystrophy and osteosarcoma
Prevention and treatment of leukemia, skin cancer, breast cancer, colon cancer and prostate cancer

Advantages

Pronounced anticancer activities
Longer compound half-life
High calcemic activity useful against bone diseases
Can be administered in many forms

Institution

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